

**JAMAICA DEVELOPERS ASSOCIATION
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**THE IMPORTANCE OF CONSTRUCTION PROJECT MANAGEMENT IN NEW DEVELOPMENTS
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INTRODUCTION

The role of project management and the project manager in real estate development was first acknowledged in Jamaica in 1968 with the formation of the Urban Development Corporation (UDC). The structure of the Jamaican UDC, a statutory corporation, was based on the Urban Development Corporation of New York State also formed in 1968 established by its then governor, Nelson Rockefeller. Its primary role was to create economic growth and investment in New York State's property market particularly emphasizing the provision of social housing.

In Jamaica, the UDC's role was to create development opportunities in specific areas, referred to as Designated Areas under the UDC Act of 1968, including the waterfronts of Kingston, Ocho Rios, Montego Bay, Oracabessa and the Hellshire Hills. For each of these Designated Areas a project manager was appointed supported by an in-house technical team comprising architectural planners and architects, engineers, estate managers and financial advisors.

A project manager's input in real estate development should commence as early in the development cycle as is possible as this will assist in ensuring success. Not all developers will feel the need to appoint a project manager as many will have their own project management expertise related to their own developments. However, the terms of reference for appointing a project manager should not vary significantly.

WHAT DEFINES A SUCCESSFUL DEVELOPMENT?

A successful real estate project is easily explained as a development completed on time, to a standard and quality in accordance with the approved construction drawings and specifications and, most importantly, completed within budget and achieving the expected financial returns.

What percentage of projects are able to achieve these goals? I have no empirical evidence but believe the actual percentage to be very low. As a project manager I considered my work load to have been 50% completed before construction had even commenced. My personal explanation for the large number of unsuccessful projects is the lack of appropriate planning. Over many years, a number of financial institutions have appointed me to act as receiver & manager on distressed or failing projects, the intent mainly being to complete construction of the developments and then to arrange to sell them in order to reduce outstanding loan balances. What most had in common was a lack of pre-construction planning and appropriate supervision and management during construction.

There is no generic schedule providing details of a project manager's role and their responsibilities. Each type of development requires specific responsibilities and expertise and these will often be determined as projects progress through their development cycles.

PRE-FEASIBILITY STUDIES

Feasibility studies are typically prepared by the developer or project manager. They are dynamic and subject to changes during the planning and design stages of any project. They should reflect a developer's assumptions and knowledge at the time of their preparation. At the pre-feasibility stage assumptions may be no more than intelligent guesswork but a gradual 'hardening of numbers' is achieved as designs and drawings progress through their various stages - conceptual, schematic, design development and finally construction working drawings. Eventually, feasibility studies will be supported by detailed pre-construction budgets during the construction working drawings stage followed by 'shadow-priced' bills of quantities and actual contract sums following the tender or negotiation of contracts.

Shadow pricing of the bills of quantities will be undertaken by the project's quantity surveyors and the engineers responsible for mechanical, electrical, plumbing and fire protection installations.

A feasibility study should comprise:

- i. The development budget estimating the projected development costs and projected revenues. This budget should provide the projected return on investment capital (IRR) and percentage return on development cost. It represents a development's projected Profit and Loss Account.
- ii. A monthly cash flow projection also estimating financing costs including interest charges. The cash flow may determine a project's phasing if limited capital is available with the interest calculations showing the potential impact of delays.
- iii. Market research information establishing demand, selling prices or lease rental rates, and the developer's estimates on the pace of sales or the generation of lease income.
- iv. Risk analyses (i.e., what if assumptions)

A project's risk analysis may for example determine the impact of phasing a development or assess the impact of delays and of increases in development costs. The pre-feasibility studies should show the impact of the alternative risk scenarios on projected returns and cash flows.

A major and unpleasant risk faced by all developers is to accept that a project may have to be postponed or abandoned as it is unable to offer a satisfactory comfort level of viability or is faced with too many uncontrollable risks. I was involved in projects during the 1980s when interest rates climbed to over 100% causing many developments to fail and eventually be FINSAC'd.

Financial institutions are increasingly carrying out their own intensive internal investigations of developers' financial projections. These are likely to dictate the level of equity capital

developers are required to invest (typically between 20%-30%). They are also likely to impose a minimum level of sales commitments or confirmed leases in place before disbursing their loan funds. Bank lenders are increasingly refusing to allow prepayment sales proceeds lodged to banking escrow accounts to be utilized towards the funding of construction expenditure as permitted by the Real Estate (Developers & Dealers) Act as this impairs their security of being the first mortgage lender. This naturally increases the amount of loan funding required resulting in increased legal fees and costs, arrangement fees as well as interest charges and poses additional an risk factor on the developer.

A project manager and developer should be able to control development costs in line with their approved budgets. I have recently become aware that financial institutions are relying on being advised by a project's quantity surveyor or project manager before major changes or variation orders are approved particularly if they are expected to provide additional loan funds to meet the increased costs. I am no longer surprised at this as, in my experience, developers themselves are mainly responsible for increased costs as insufficient scrutiny of the contract drawings and specifications was paid prior to construction commencing. When developers physically inspect construction works in progress changes are insisted resulting in the issuing of variation orders. These may lead to disputes and extensions of time and compensation claims by contractors. Financial institutions regularly insist that developers fund these increased costs also insisting that developers' equity capital be used to initially fund projects.

Feasibility or viability can only be achieved by establishing a clear understanding of prevailing market conditions and by ensuring affordability. I have never been more confused in my understanding of market conditions as prevails today. I have seen examples of residential real estate in similar attractive locations and options being advertised for sale at unit prices varying by as much as 200%. Also, construction cost estimates often vary widely.

Lease rental rates for newly developed commercial properties, based on my calculations, have had to increase by almost 300% over the last 2-3 years in order to assure viability. These substantial increases in revenues are necessary because of ever increasing land prices, changes to NEPA's planning requirements for the provision of parking spaces as well as inflationary increases in the cost of construction materials and labour and interest rates. Parking is now being provided within the curtilages of a building's structure enormously increasing the construction cost of offices and other commercial developments and multi-family residential developments. Revenues are calculated on strata lot or rentable areas. I have seen recent instances where 40%-50% of an office or retail developments' gross building areas are required for the provision of parking.

It is important to emphasize that 'marketability is principally driven by affordability'. Location, aesthetics, size, features, services, all play an important role in buyers' perceptions and must not be ignored, but there is no market, no effective or realistic demand, if that market is unable to afford the acquisition cost or lease rental rates. The market should determine what development costs can be afforded and not the market being determined by a project's development costs.

The impact of providing inadequate parking by project developers should be a major concern as this could have a direct impact on marketability and, consequently, sales or occupancy levels and revenue potential.

After a target market has been defined, the developer or project manager should prepare a pre-feasibility study. Such a study will assist in providing a realistic assessment of what can or must be achieved in terms of densities, plot and footprint ratios, sizes of units, heights of buildings, set-backs, infrastructural provisions including road reservations, recreational and amenity areas and financing requirements. It should incorporate the impact of statutory and regulatory conditions including the supply of potable water, sewage collection, treatment and the disposal of effluent, storm water drainage and amenity area requirements.

A Planning Enquiry should be undertaken at NEPA's Development Assistance Centre so as to ensure the project is meeting NEPA's planning guidelines and also reflect the inputs and conditions of the utility companies. It should be discussed with NEPA if an Environmental Impact Assessment study will be a requirement and, if necessary, its terms of reference agreed.

It is recommended that the pre-feasibility study be completed even before land is acquired and should certainly be completed before architectural and engineering designs are underway beyond the conceptual design stage.

The pre-feasibility study should be a requirement of and a prelude to the preparation of a design brief by the project manager and provide the developer with the knowledge and information for instructing the design team as to what can reasonably be expected. Budgetary limitations should be imposed. The planning and design stages of a project are dynamic and changes will occur between the conceptual and schematic stages up to the construction working drawings stage.

However, the design brief should be finalized during design development as re-designs will be costly during the construction working drawings stage, both in terms of value and time, and even costlier if construction works have commenced. Professionals, particularly architects, should be required to explain their drawings. Software exists to provide a virtual tour or walkthrough of their projects and this is a huge benefit to developers as well as a marketing tool. The additional cost of this virtual study may be less than the cost of the owner requesting the issuing variation orders for changes after construction has commenced.

Real estate development is a risky business and there is no substitute for meticulous project planning allowing a complete assessment of the risk factors.

ACQUISITION OF LAND

Concurrent with the pre-feasibility exercise, the developer should research the parcel of land which it is proposed to develop. The following is a brief checklist of areas that should be researched. There may be reluctance to incur all of the costs associated with this list

before the land is acquired but the more research completed in the earliest stages of the development cycle should avoid costly mistakes later.

- i. Ensure legal advice is obtained concerning limitations imposed by restrictive covenants, easements, rights-of-ways, etc.
- ii. Seek advice on proposed subdivisions or phasing of the project and the issuing of splinter titles. Strata titles may impact the ability to phase a development.
- iii. Determine the future ownership of roads and services - are these to be retained by the developer and their ownership handed over to future purchasers or will ownership be transferred to local authorities? Identify the legal implications of what is proposed and the mechanics to achieve it?
- iv. Commission boundary and topographical surveys. I have experienced examples of developers unwilling to commission and pay for topographical surveys only to incur substantial cost over-runs because infrastructure works have been poorly planned and designed. Sewage collection by gravity is less expensive than lift stations and force mains. Constructing a road around a hill of hard rock or a depression is cheaper than through or over them. Storm water drainage designs are imperative so as to determine where water will drain. Are there encroachments on the site to be resolved? Can roadways accessing the site be widened if required?
- v. Instruct land surveyors to identify major trees and other notable features. Trees have value and add attractiveness and will certainly assist in the marketability of any project. Evaluate the site's landscaping possibilities – unfortunately landscaping is too often ignored and its importance unrecognized.
- vi. Agree with your civil & structural engineer whether soils investigations are needed. Do not skimp on the number of boreholes - you may regret it later.
- vii. Walk the site and get a 'feel' for it. Are there security or noise problems which need to be addressed? Visit the site during heavy rainfall. How does it drain and where to? Are there old gully courses or river beds which may have been filled that could possibly result in foundation problems? Talk to neighbouring owners – very often they have a treasure trove of information.

PROJECT AND CONSTRUCTION MANAGEMENT AND CONSTRUCTION SCHEDULING

For developers and project/construction managers one of the most useful tools available is computer software facilitating the scheduling or programming of construction and other activities involved in the development process. The preparation of a construction schedule forces the developer and project manager to logically schedule and sequence the development process and for the contractor to plan and sequence his scheduled tasks recognizing both preceding and succeeding construction activities and to efficiently schedule the use of their resources – manpower, materials and equipment.

A contractor drawing lines across a time scale for a small number of tasks, thereby creating a Bar or Gantt Chart, means little except for a project small in scope and is an ineffective tool. It may also place the contractor at considerable risk as a poorly prepared schedule when submitted to the developer may be accepted as the contractual construction schedule with the responsible consultants denying extensions of time or disruption claims as the schedule is insufficiently detailed to enable accurate assessments of contractors' claims.

Construction schedules with thousands of tasks can now be programmed with predecessor and successor linkages. This is not as onerous as it sounds, as the ability to copy and paste repetitive tasks such as with housing developments or office buildings with typical floors is straightforward. For example, once you have one house or a phase of houses accurately programmed, their scheduling can be repeated ad infinitum with appropriate linkages between the completion of selected tasks and the commencement of others.

Computer software automatically identifies critical tasks (those tasks with no or limited float time) allowing the project manager and contractor to concentrate on areas most likely to delay construction.

As mentioned above, a major advantage of construction scheduling is that it forces the developer, contractor and the project/construction manager to 'think a project through' in detail. Apart from identifying critical paths, which may change as schedules are updated, milestone dates will be identified which can be incorporated as sectional completion dates into construction contracts. For example, a contractor completing an early phase of construction by a milestone date may be a pre-condition for being awarded later phases of construction.

It is important to partially resource construction schedules particularly when limited resources are available. Scheduling tasks on paper is easy and scheduling the completion of a contract on time is easily achieved by artificially shortening task durations. But are resources available to complete these tasks within the shortened time-frames contemplated?

Experience shows that the most critical resources are the procurement of materials and equipment, incorporating the lead-times necessary for specialized materials to be delivered to site and also the provision of skilled trades.

I have worked on projects where resourcing construction schedules have identified constraints such as:

- i. Insufficient concrete batching equipment located on site to meet the contractor's scheduling of concrete requirements. This was in a Caribbean territory with the location having no pre-mix concrete plants.
- ii. Insufficient back-hoes on site to excavate building foundations in keeping with their schedule. This was a critical activity and would have ultimately delayed Practical Completion.

- iii. Inadequate craneage on site to handle the turn-around time of tunnel forms. The casting of concrete in the erected tunnel forms was programmed on a 24-hour cycle with tasks clearly identified at half-hourly intervals. A delay of more than 2-3 hours in the 24-hour cycle resulted in a full day's delay.
- iv. Inadequate numbers of carpenters, masons, steelmen, tilers, painters - to achieve the desired programmed dates.
- v. Procurement delays resulting from the failure of the developer's project team to detail or specify materials in advance and to anticipate the procurement requirements before availability. This includes suppliers' critical shop drawing approval processes, importation requirements – loading on board ships and shipping delays, customs delays and deliveries to site. This is especially important nowadays because of the volume of materials imported from China and shipping delays following the Covid epidemic and the Red Sea/Yemen conflict.

The construction contract should stipulate the necessity for the construction schedule to be periodically updated, at intervals of not more than one month, preferably before site meetings and with current completion percentages incorporated. Computer software permits the tracking of progress for uncompleted and delayed tasks to be automatically rescheduled whilst still recognizing and retaining their linkages. This will indicate the extent of delays prompting mitigation measures.

Delays, if they are to be mitigated, usually require the compressing of the durations of trades within shorter time-frames, if delays are to be reduced. This is referred to as the 'stacking of trades' and requires additional resources to be identified and sourced. Acceleration may be requested with associated costs such as additional equipment and supervision or increased overtime being a cost factor with compensation to be paid by the developer or contractor, depending on the party responsible for delays.

A detailed construction schedule will assist contractors, project/construction managers, architects and engineers to evaluate claims for delays resulting in extensions of time and also for claims involving disruption, acceleration and the stacking of trades. It is ironic that many contractors have become increasingly sophisticated in developing and submitting claims but have yet to adopt the sophisticated tools available to assist and enhance their management techniques.

PROJECT ADMINISTRATION

Site meetings between contractors and a project's technical team should be scheduled at least at monthly intervals and, if difficulties arise, preferably every two weeks. The developer and project manager should be allowed to insist on attendance by any member of the contractor's team, including major subcontractors. It is recommended this be imposed as a contract condition.

The use of Provisional Sums in the construction contracts' bills of quantities should be restricted as they frequently represent works that are not fully designed or specified and

represent risk factors leading to future delays and contractors' claims for compensable delays.

A construction contract's General Conditions and Specifications should require:

- i. The contractor to prepare progress reports to be issued prior to site meetings. The report should identify delays and causes, major concerns including the insufficiency of design information that may cause delays, workforce numbers by trade, accidents, and any other matters the project teams consider important. As a project manager, I prepared the minutes of site meetings and identified those parties responsible for actioning issues requiring follow up.
- ii. A paper trail should be established ensuring there are written instructions and the required authorizations for the issuing of:
 - Site Instructions – architects & engineers
 - Contractor's Requests for Information (RFIs).
 - Confirmation of Verbal Instructions (CVIs)
 - Variation/Change Orders – unpriced and priced and with their probable impact on the contractor's construction schedule identified.

Construction drawings, specifications, and programmes of works (construction schedules) are all contract documents. If these are poorly prepared they will have financial implications for the developer as with a poorly drafted contract.

Real estate development is fraught with risks and I certainly do not begrudge developers their profit margins. Successful project managers and developers should make every effort to reduce a project's exposure to risk and uncertainty and this is only achievable by investing in project preparation – site planning, completed construction drawings, budgeting, contract specifications and construction contracts with conditions representing the developer's intent.